

## CLAIMS

1. A commutator motor comprising:

an iron core having plural slots that are used for coil winding;

5 a rotation shaft inserted in a center of said iron core

a pair of first and second commutators mounted on said rotation shaft at opposite ends of said iron core;

a first coil wire connected to the first commutator, and wound on bottoms of the slots of said iron core to form an inner coil;

10 a second coil wire connected to the second commutator, and wound on said inner coil in the slots of said iron core to form an outer coil;

a first terminal that can be connected to a first power source to supply electric power of said first power source to said first coil wire through said first commutator; and

15 a second terminal that can be connected to a second power source to supply electric power of said second power source to said second coil wire through said second commutator;

wherein a diameter of said second coil wire is smaller than that of said first coil wire.

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2. The commutator motor as set forth in claim 1, wherein a winding start position of said second coil wire of said outer coil is displaced at 90 degrees about said iron core with respect to a winding end position of said first coil

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